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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|----------------------------------|-------------|----------------------|---------------------|------------------|
| 10/080,754 | 02/22/2002 | Gerald W. Fly | 8540G-000058 | 9350 |
| 27572 | 7590 | 03/02/2004 | EXAMINER | |
| HARNESS, DICKEY & PIERCE, P.L.C. | | | CHANAY, CAROL DIANE | |
| P.O. BOX 828 | | | ART UNIT | PAPER NUMBER |
| BLOOMFIELD HILLS, MI 48303 | | | 1745 | |

DATE MAILED: 03/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | |
|------------------------------|--------------------------------------|-----------------------------------|
| Office Action Summary | Application No. 10/080,754 | Applicant(s) FLY ET AL. |
| | Examiner Carol Chaney | Art Unit 1745 |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 22 February 2002.
 2a) This action is FINAL. 2b) This action is non-final.
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-19 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
 5) Claim(s) _____ is/are allowed.
 6) Claim(s) 1-19 is/are rejected.
 7) Claim(s) _____ is/are objected to.
 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
 Paper No(s)/Mail Date _____.
- 4) Interview Summary (PTO-413)
 Paper No(s)/Mail Date. _____.
 5) Notice of Informal Patent Application (PTO-152)
 6) Other: _____.

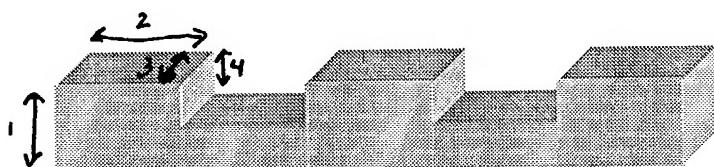
Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 5-7 and 19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claims 5-7, the term "thickness" in the phrase "the thickness of said lateral edge portions is less than the thickness of said medial portion is indefinite because the dimension to which "thickness" refers is unclear. The thickness of the lateral portions could refer to any of the following dimensions:



Claim 19 recites the limitation "plurality of porous coolant flow channels" in lines 1 and 2. There is insufficient antecedent basis for this limitation in the claim. Claim 1 recites porous flow channels. It is unclear if these are the same or distinct from coolant channels.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

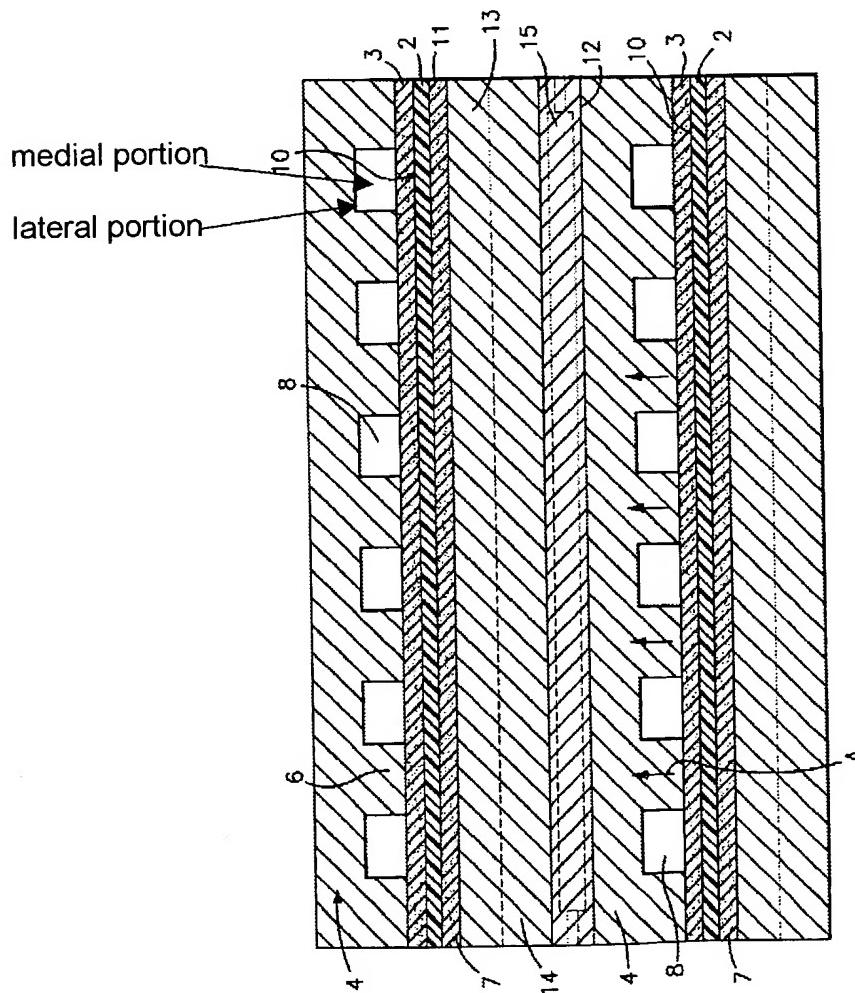
Claims 1, 3, 13, 15, and 17 are rejected under 35 U.S.C. 102(e) as being anticipated by Cipollini, US Patent 6,258,476.

Cipollini discloses a solid polymer membrane fuel cell which include a solid polymer membrane (2), a porous cathode catalyst layer (3) and a porous anode catalyst layer (7). Attached to the cathode catalyst layer is a gas distribution layer, cathode reactant gas flow field plate (4). This gas distribution layer has a plurality of porous flow channels (8) which extend transversely through the gas distribution layer, in a

generally parallel orientation. (See Fig. 2.) Plate 4 is also a product water transport plate, and side (12) of the plate forms the wall of coolant water channel (15). (Note column 5, lines 11-35 and Fig. 2, reference numerals 2, 3, 4, and 7). The surface of the plates opposite the ribs contact a gas impermeable member (14), which is a non-porous, conductive separator plate.

With regards to claim 3, the porous flow channels illustrated by Cipollini have medial portion and a pair of lateral edge portions. (See Figure). Clearly, the medial portion will have a permeability which is more than 200% greater than the permeability of the lateral edge portions.

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With regards to claim 13, an electrically conductive metal porous sinter or sponge may also be used in plate (4). Metal sponge is considered a type of metal foam. (Column 7, lines 40-48.) With regards to claim 15, an exemplary embodiment of the invention includes using a porous carbon (carbon foam) water transfer plate. (Column 5, lines 60-63.) With regards to claim 17, a coolant distribution layer contains channel (15) in the Cipollini patent.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2, 4, 9, 10, 14, 16, 18, rejected under 35 U.S.C. 103(a) as being unpatentable over Cipollini.

With regards to claims 2, 4, and 9, Cipollini discloses applicants' invention essentially as claimed, with the exception that specifics of porosities, gas permeability, and electrical resistance are not disclosed. However, it is clear to one of ordinary skill in the art that porosity will effect gas permeability, which will effect gas flow, which will effect output voltage of a fuel cell. Thus, it would have been obvious to one of ordinary skill in the art to adjust porosity and permeability in order to achieve the desired operating properties of a fuel cell.

With regards to claim 10, Cipollini discloses applicants' invention essentially as claimed, with the exception that the electrical resistance of flow channels is not specifically described by Cipollini. However, it would have been obvious to one of ordinary skill in the art to reduce the electrical resistance as much as possible in order to reduce the internal resistance of the fuel cell. In the absence of a showing of unexpected results or criticality of the value of 50 mΩ-cm, electrical resistance is considered to be a result-effective variable which would have been within the skill of the ordinary artisan to adjust.

With regards to claims 14 and 16, Cipollini discloses applicants' invention essentially as claimed, with the exception that Cipollini does not specifically disclose particular metallic foams or types of carbon foam to be used. However, without a showing of unexpected results resulting from the material recited by the applicants, one of ordinary skill in the art would consider the Cipollini generic disclosures of carbon particles and metallic sponge to encompass the materials recited by the applicants.

With regards to claim 18, Cipollini discloses applicants' invention essentially as claimed, with the exception that Cipollini does not specifically disclose a plurality of coolant flow channels. The Cipollini disclosure does not recite a specific number of coolant flow channels in the invention, although there is clearly at least one channel. Duplicate channels would provide additional cooling. The duplication of parts (for a multiplied effect) has been shown to be obvious unless a synergistic effect can be shown. See St. Regis Paper Co. v. Bemis Co., Inc., 193 USPQ 8, 11, (7th Cir.) 1977. Therefore, it would have been obvious to one of ordinary skill in the art to provide a

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plurality of coolant flow channels in the Cipollini invention in order to provide additional cooling.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Carol Chaney whose telephone number is (571) 272-1284. The examiner can normally be reached on Mon - Fri 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Carol Chaney
Primary Examiner
Art Unit 1745

cc